Listing of Claims:

1. (CURRENTLY AMENDED) A method of operating a floating gate pixel, comprising:

providing a P type silicon substrate;

forming an N well in said substrate, wherein said N well is N type silicon and has no contact regions formed therein;

forming a P well in said N well, wherein said P well is P type silicon;

forming a contact region in said P well, wherein said contact region is P^+ type silicon and is the only contact region formed in said P well;

forming a gate oxide on said substrate, wherein ~~said the thickness of~~ said gate oxide has a thickness which is sufficiently small to allow tunneling through said gate oxide;

forming a floating gate on said gate oxide, wherein said floating gate is directly over part of said P well and part of said N well and the only electrical connection to said floating gate is to connect said floating gate to a means for determining the potential of said floating gate;

resetting the potential between said P well and said substrate during a reset period wherein a tunneling current between said P well and said floating gate resets the potential of said floating gate;

accumulating charge at the PN junction between said P ~~well~~ type silicon substrate and said N well during a charge integration period, thereby changing the potential of said N well, said P well, and said floating gate and wherein said charge integration period follows said reset period; and

reading the potential of said floating gate after said charge integration period has been completed.

2. (CURRENTLY AMENDED) The method of claim 1 wherein the charge accumulated at the PN junction between said P ~~well~~ type silicon substrate and said N well is related to the amount of light incident on the P ~~well~~ type silicon substrate and the N well during said charge integration period.

3. (ORIGINAL) The method of claim 1, further comprising:

forming an electrical connection between said contact region formed in said P well and a means for resetting the potential between said P well and said substrate; and

forming an electrical connection between said floating gate and said means for determining the potential of said floating gate.

4. (CURRENTLY AMENDED) The method of claim 1 wherein the PN junction between said P ~~well~~ type silicon substrate and said N well forms a photodiode.

5. (ORIGINAL) The method of claim 1 wherein the thickness of said gate oxide is less than or equal to 30 Angstroms.

6. (ORIGINAL) The method of claim 1 wherein said resetting the potential between said P well and said substrate is accomplished using a reset transistor.

7. (CURRENTLY AMENDED) The method of claim 1 wherein said means for determining the potential of said floating gate comprises a source follower transistor circuit.

8. (CURRENTLY AMENDED) A method of operating a floating gate pixel, comprising:

providing an N type silicon substrate;

forming a P well in said substrate, wherein said P well is P type silicon and has no contact regions formed therein;

forming an N well in said P well, wherein said N well is N type silicon;

forming a contact region in said N well, wherein said contact region is N^+ type silicon and is the only contact region formed in said N well;

forming a gate oxide on said substrate, wherein ~~said the thickness of~~ said gate oxide has a thickness which is sufficiently small to allow tunneling through said gate oxide;

forming a floating gate on said gate oxide, wherein said floating gate is directly over part of said N well and part of said P well and the only electrical connection to said floating gate is to connect said floating gate to a means for determining the potential of said floating gate;

resetting the potential between said N well and said substrate during a reset period wherein a tunneling current between said N well and said floating gate resets the potential of said floating gate;

accumulating charge at the PN junction between said N ~~well~~ type silicon substrate and said P well during a charge integration period, thereby changing the potential of said P well, said N well, and said floating gate and wherein said charge integration period follows said reset period; and

reading the potential of said floating gate after said charge integration period has been completed.

9. (CURRENTLY AMENDED) The method of claim 8 wherein the charge accumulated at the PN junction between said N ~~well~~ type silicon substrate and said P well is related to the amount of light incident on the N ~~well~~ type silicon substrate and the P well during said charge integration period.

10. (CURRENTLY AMENDED) The method of claim 8, further comprising:

forming an electrical connection between said contact region formed in ~~said P well~~ said N well and a means for resetting the potential between ~~said P well~~ said N well and said substrate; and

forming an electrical connection between said floating gate and said means for determining the potential of said floating gate.

11. (CURRENTLY AMENDED) The method of claim 8 wherein the PN junction between said P well and said N ~~well~~ type silicon substrate forms a photodiode.

12. (ORIGINAL) The method of claim 8 wherein the thickness of said gate oxide is less than or equal to 30 Angstroms.

13. (CURRENTLY AMENDED) The method of claim 8 wherein said resetting the potential between ~~said P well~~ said N well and said substrate is accomplished using a reset transistor.

14. (CURRENTLY AMENDED) The method of claim 8 wherein said ~~determining~~ reading the potential of said floating gate comprises a source follower transistor circuit.

15. (CURRENTLY AMENDED) A floating gate pixel, comprising:

a P type silicon substrate;

an N well formed in said substrate, wherein said N well is N type silicon and has no contact regions formed therein;

a P well formed in said N well, wherein said P well is P type silicon;

a contact region formed in said P well, wherein said contact region is P^+ type silicon and is the only contact region formed in said P well;

a gate oxide formed on said substrate, wherein ~~said the thickness of~~ said gate oxide has a thickness which is sufficiently small to allow tunneling through said gate oxide;

a floating gate formed on said gate oxide, wherein said floating gate is directly over part of said P well and part of said N well;

means for resetting the potential between said P well and said substrate; and

means for reading the potential of said floating gate, wherein the only electrical connection to said floating gate is to connect said floating gate to said means for reading ~~determining~~ the potential of said floating gate.

16. (ORIGINAL) The floating gate pixel of claim 15 further comprising:

electrical connection between said contact region formed in said P well and said means for resetting the potential between said P well and said substrate; and

electrical connection between said floating gate and said means for determining the potential of said floating gate.

17. (CURRENTLY AMENDED) The floating gate pixel of claim 15 wherein the PN junction between said P ~~well~~ type silicon substrate and said N well forms a photodiode.

18. (ORIGINAL) The floating gate pixel of claim 15 wherein the thickness of said gate oxide is less than or equal to 30 Angstroms.

19. (ORIGINAL) The floating gate pixel of claim 15 wherein said means for resetting the potential between said P well and said substrate comprises a reset transistor.

20. (ORIGINAL) The floating gate pixel of claim 15 wherein said means for determining the potential of said floating gate comprises a source follower transistor circuit.

21. (CURRENTLY AMENDED) A floating gate pixel, comprising:

an N type silicon substrate;

a P well formed in said substrate, wherein said P well is P type silicon and has no contact regions formed therein;

an N well formed in said P well, wherein said N well is N type silicon;

a contact region formed in said N well, wherein said contact region is N^+ type silicon and is the only contact region formed in said N well;

a gate oxide formed on said substrate, wherein ~~said the thickness of~~ said gate oxide has a thickness which is sufficiently small to allow tunneling through said gate oxide;

a floating gate formed on said gate oxide, wherein said floating gate is directly over part of said N well and part of said P well;

means for resetting the potential between said N well and said substrate; and

means for determining the potential of said floating gate, wherein the only electrical connection to said floating gate is to connect said floating gate to said means for determining the potential of said floating gate.

22. (ORIGINAL) The floating gate pixel of claim 21 further comprising:

an electrical connection between said contact region formed in said N well and said means for resetting the potential between said N well and said substrate; and

an electrical connection between said floating gate and said means for determining the potential of said floating gate.

23. (CURRENTLY AMENDED) The floating gate pixel of claim 21 wherein the PN junction between said N ~~well~~ type silicon substrate and said P well forms a photodiode.

24. (ORIGINAL) The floating gate pixel of claim 21 wherein the thickness of said gate oxide is less than or equal to 30 Angstroms.

25. (CURRENTLY AMENDED) The floating gate pixel of claim 21 wherein said means for resetting the potential between said ~~P well~~ N well and said substrate comprises a reset transistor.

26. (CURRENTLY AMENDED) The floating gate pixel of claim 21 wherein said means for ~~reading~~ determining the potential of said floating gate comprises a source follower transistor.